REMARKS

The specification and claim 7 have been amended, at the examiner's suggestion, to correct informalities. Claim 5 has been amended to delete "carboxylic acids" from the group.

Claims 1 - 7 are pending in the application and stand rejected under 35 U.S.C. 102(b) as being anticipated by Priester et al. (U.S. 5,707,569) and under 35 U.S.C. 103 (a) as being unpatentable over Woods (U.S. 6,734,252 B1) in view of Priester et al. (U.S. 5,707,569).

Applicants' invention, as defined in claim 1, is a process aid masterbatch composition that contains 0.05 to 25 weight percent fluoropolymer; 0.2 to 10 weight percent of a certain type of organic soap; at least 5 weight percent of mineral particulate; and a non-fluorinated melt processable polymer. The organic soap may be a C_6-C_{34} carboxylic acid, or salt thereof, or a C_6-C_{34} hydrocarbon sulfonate or salt thereof. A masterbatch is a concentrate of process aid which an extruded article manufacturer will let down (i.e. significantly dilute) in non-fluorinated melt processable polymer to form an extrudable composition.

Some manufacturers of extruded articles add mineral particulates to their non-fluorinated melt processable polymers prior to extrusion. These particulates are finely divided, substantially inorganic materials that remain solid at the temperature that the polymers will be extruded. Such materials include antiblocks, pigments and acid scavengers for modifying the appearance or properties of the extruded article being produced (page 7, line 24 – page 8, line 2). In some end use applications, it is convenient to add the mineral particulates to the extrudable composition as part of the process aid masterbatch, rather than having to add the particulate to the extrudable composition separately.

For years, fluoropolymers have been employed as process aids to improve the extrusion processability of melt processable polymers. However, the effectiveness of prior art fluoropolymer process aids to improve extrusion processability is diminished when mineral particulates are present in the process aid masterbatch at a high level, i.e. >5 wt.%.

Applicants have surprisingly discovered that the effectiveness of fluoropolymer process aids may be preserved when in the presence of high levels of mineral particulate (i.e. in a masterbatch containing more than 5 weight percent mineral particulate) if an organic soap is present in the process aid masterbatch. Without the presence of organic soap, fluoropolymer process aid is adsorbed onto the surface of mineral particulate in the masterbatch, diminishing the ability of the process aid to improve extrusion processability. Applicants do not wish to be bound by any theory, but it is believed that when an organic soap

is present in the process aid masterbatch, the organic soap is preferentially adsorbed onto the mineral particulate, instead of fluoropolymer, preserving the fluoropolymer's ability to improve extrusion performance (page 8, lines 3-8).

Priester et al. ('569 patent) disclose that certain additives can interfere with the performance of fluoropolymer process aids in improving the extrusion processability of non-fluorinated melt processable polymers. Interfering additives include salts of the broad class of carboxylic acids, such as caprylic acid, lauric acid, palmitic acid and stearic acid, and hydroxy-carboxylic acids such as lactic acids, maleic acid, tartaric acid and citric acid. Specific examples of interfering additives include calcium stearate, zinc stearate, calcium lactate, magnesium lactate, calcium carbonate, potassium aluminum sulfate and hydrotalcites (col. 2, lines 35-55). In order to counteract the interference of such additives, Priester et al. employ a polar-side-group-containing extrusion adjuvant (col. 2, lines 24-34). The latter adjuvants are defined as compounds having essentially no fluorine, at least two carbon atoms not in polar side groups, at least four polar side groups and, if a polymer, at least one polar side group per hundred carbon atoms. Specific examples of suitable adjuvants include EDTA and ionomer resins (col. 3, line 14- col. 4, line 13).

Priester et al. do not disclose Applicants' four component process aid masterbatch (concentrate) having the relatively high levels of ingredients identified in Applicants' claim 1. Any compositions in the '569 patent that contain A) fluoropolymer, B) non-fluorinated melt processable polymer, C) a salt of a carboxylic acid and D) a filler such as pigment antiblocking agent, antioxidants and the like are dilute extrudable compositions. Priester et al. teach that extrudable compositions contain a major portion of non-fluorinated melt processable polymer and minor portions (i.e. less than 1 wt. % each, preferably less than 2500 ppm each) of the other ingredients, A), C) and D) (col. 5, lines 19-25). Since the '569 patent does not disclose any compositions that contain both 0.05 to 25 weight percent fluoropolymer and at least 5 weight percent mineral particulate, Priester et al. cannot anticipate Applicants' claimed invention. Furthermore, since Priester et al. never had such a concentrated composition of fluoropolymer and mineral particulate, he may not have been aware of the problem of adsorption of fluoropolymer onto the particulate, much less any possible solution. In fact, the '569 patent teaches that metal salts of carboxylic acids are among the types of additive that *reduce* the effectiveness of fluoropolymer process aids (col. 2, lines 49-50). This is the opposite of the *positive* effect that Applicants discovered for such salts in Applicants' masterbatch compositions.

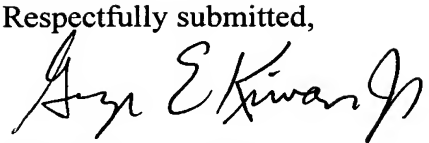
Woods ('252 patent) discloses both processing additive compositions (i.e. process aids) for thermoplastic hydrocarbon polymers, as well as melt processable compositions that contain the process aid. The melt processable compositions contain a major amount of a melt processable thermoplastic hydrocarbon polymer and a minor amount of a processing additive comprising a certain thermoplastic fluoropolymer and a poly(oxyalkylene) polymer. Thermoplastic hydrocarbon polymers include copolymers of olefins with comonomers that have pendant free carboxylic acid groups or metal salts thereof, thus resulting in copolymers having a plurality of such pendant groups. The fluoropolymer contains copolymerized units of vinylidene fluoride, at least two other fluorinated comonomers and, optionally, a non-fluorinated α-olefin comonomer. Processing additive compositions are described as concentrates of 50-80 wt.% thermoplastic fluoropolymer and 50 to 20 wt.% poly(oxyalkylene) polymer (col. 3, lines 12-29). It is taught that masterbatches typically contain 2-50 weight percent of the latter concentrate in hydrocarbon polymer, while extrudable melt processable blends typically contain 0.005-2 wt.% concentrate diluted in thermoplastic hydrocarbon polymer (col. 7, lines 7-16). Melt processable blends (i.e. compositions containing dilute fluoropolymer) may also contain additives such as antioxidants, antiblocks, pigments and fillers (col. 8, lines 35-37).

Wood does not disclose masterbatches (i.e. compositions containing relatively high levels of fluoropolymer such as Applicants' claimed masterbatches) that also contain high levels (>5 wt.%) of antioxidants, antiblocks, pigments, fillers and the like. Wood also does not disclose Applicants' organic soaps. Wood's thermoplastic olefin melt processable copolymers having a plurality of free carboxylic acid groups (or salts thereof) are not similar to Applicants' soap that is a C_6-C_{34} carboxylic acid, or salt thereof, or a C_6-C_{34} hydrocarbon sulfonate or salt thereof.

The simple combination of the disclosures of Woods and Priester et al. does not result in Applicants' invention as defined in claim 1, i.e. a masterbatch composition having the relatively high level of ingredients specified in the claim. Furthermore, Priester et al. teaches that additives such as calcium or zinc stearate have a *deleterious* effect on fluoropolymer process aid performance. Thus, Priester et al. teach away from Applicants' inventive masterbatch composition that includes a metal stearate for *improving* the performance of the fluoropolymer process aid.

In view of the above amendments and remarks, Applicants believe that the instant application is in condition for allowance. Reconsideration and such favorable action is requested.

Respectfully submitted,



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